

REPLY

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Japanese Patent Office

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5 Reply

[1] The examiner stated in the opinion that the inventions of claims 1 to 5 of the subject application lacked novelty and inventive steps in consideration of the descriptions of the microfilm of the Japanese Utility Model Application No. 1-40970 (ORIENTEC CO., LTD.) of November 1, 1990 (hereinafter "Reference 1") and JP2001-335206 A (Hitachi Koki Co., Ltd.) of December 4, 2001 (hereinafter "Reference 2").

However, the applicant of the subject application filed an amendment to make the differences between the inventions of the subject application and those of References 1 and 2 more distinct and is now convinced of the novelty and inventive steps of the inventions of the subject application on the grounds below.

## [2] Inventions of Subject Application

### (1) Construction of Inventions

1. A position-detecting mechanism to detect a side of a subject of measurement, comprising:

a light-emitting means to emit a beam of visible light to the subject of measurement;  
and

a regulating means to regulate the beam so that its cross section will be in a certain shape at the place of the subject of measurement,  
the cross-sectional area of the beam at the place of the subject of measurement being such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible when the relative positions of the regulating means and the side of the subject of measurement have changed.

2 & 3. (Omitted because they are not necessary for the comparison with the references.)

4. A position-detecting sensor which comprises (i) a transmitting means to transmit a signal to a subject of measurement, (ii) a receiving means to receive the signal, and (iii) the position-detecting mechanism of claim 1, 2, or 3 and detects the position of the subject of measurement based on the signal received by the receiving means.

5. (Omitted because this is not necessary for the comparison with the references.)

### (2) Action and Effect of Inventions

The advantages offered by the first feature of the present invention are as follows. Because the light-emitting means emits a beam of visible light, the spot lit up by the beam on the subject of measurement is visible to the operator. Accordingly, the operator can judge the position of the subject of measurement by the position of the spot on the subject of measurement. Besides, because the beam is regulated so that its cross section will be in a certain shape at the place of the subject of measurement and the cross-sectional area of the beam at the place of the subject of measurement is such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible, the operator can judge the position of the subject of measurement just by checking the shape of the spot. Thus, the operator can easily judge the position of a subject of measurement by using his eyes alone without using a scale. The operator can easily, safely judge the position of a subject of measurement even while it is running on its production line. If the position-detecting mechanism is incorporated into a position-detecting sensor, the operator can judge the deviation of a subject of measurement from the reference line of the position-detecting sensor by using his eyes alone. Therefore, the position-detecting sensor can be calibrated easily, accurately.

The advantage offered by the second feature of the present invention is as follows. (Omitted because this is not necessary for the comparison with the references.)

The advantage offered by the third feature of the present invention is as follows. (Omitted because this is not necessary for the comparison with the references.)

The advantage offered by the fourth feature of the present invention is as follows. Because the operator can judge the relative positions of the reference line of the position-detecting sensor and a subject of measurement, he can easily, accurately calibrate the position-detecting sensor.

The advantage offered by the fifth feature of the present invention is as follows. (Omitted because this is not necessary for the comparison with the references.)

(3) Ground of Amendment

It can be derived from the description in line 36 of page 4 to line 10 of page 5 of the specification that the cross-sectional area of the beam at the place of the subject of measurement is such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible when the relative positions of the regulating means and the side of the subject of measurement have changed.

[3] Inventions of References

(1) Reference 1

Reference 1 relates to a light source for measurement which is incorporated into optical extensometers. Disposed in the optical path of the light source is a screen bearing a mark indicating a reference point, and the mark is depicted in the center of a spot lit up by the light source. With this light source, the operator can easily put the center of the light source for measurement exactly on the center of the reference line of a subject of measurement just by putting the center of the spot exactly on the center of the reference line of the subject of measurement.

However, Reference 1 neither described nor suggested the idea that the operator puts the center of such a light source for measurement exactly on the center of the reference line of a subject of measurement by making use of the change of the shape of a spot lit up by the light source.

(2) Reference 2

Disclosed in Reference 2 is a sensor to detect the meandering of a web based on the positions of the right and left sides of the web. The sensor comprises an LED and a photodiode to output voltage in proportion to quantity of light received.

However, Reference 2 neither mentioned the shape of the cross section of the beam emitted from the LED to a web or the cross-sectional area of the beam nor suggested the idea that the operator aligns the sensor and a web based on the shape or the like of a spot lit up by the LED.

[4] Comparison between Invention of Subject Application and Inventions of References

(1) Claim 1

The feature of the invention of claim 1 is that the cross section of the beam emitted from the light-emitting means is in a certain shape at the place of a subject of

measurement and the cross-sectional area of the beam at the place of the subject of measurement is such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible. Therefore, the operator can easily judge the position of the subject of measurement just by checking the shape of the spot lit up by the beam.

On the other hand, the art of Reference 1 is constructed in order to put the center of a spot lit up by the light source exactly on the center of the reference line of a subject of measurement, and it is not described in Reference 1 that the operator judges the position of the subject of measurement based on the shape of the spot. Besides, although Reference 1 describes the depiction of the mark in the center of said spot, it neither describe nor suggest the idea that the cross-sectional area of a beam at the place of a subject of measurement is such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible.

Therefore, Reference 1 could not have been a motive for the invention of claim 1 which brings about the effect that the cross section of the beam emitted from the light-emitting means is in a certain shape at the place of a subject of measurement and the cross-sectional area of the beam at the place of the subject of measurement is such that the change of the shape of the spot lit up by the beam on the subject of measurement is visible; therefore, the operator can easily judge the position of the subject of measurement just by checking the shape of the spot lit up by the beam.

(2) Claims 2 & 3

Because claims 2 and 3 are dependent on claim 1 and claim 1 has novelty and inventive steps over Reference 1, claims 2 and 3 too have novelty and inventive steps as a matter of course.

(3) Claim 4

The invention of claim 4 is a position-detecting sensor comprising the position-detecting mechanism of claim 1. Accordingly, it brings about the effect that the operator can easily judge the position of a subject of measurement by using his eyes alone.

On the other hand, Reference 2 discloses a sensor comprising an LED and a photodiode, but does not suggest the idea that the operator aligns a sensor and a web based on the shape of a spot lit up by a beam cast onto the web. And, as described above, the position-detecting mechanism of claim 1 has novelty and inventive steps over Reference 1; therefore, a person skilled in the art could not have easily arrived at the invention of claim 4 if he considered the arts of References 1 and 2.

Therefore, References 1 and 2 could not have been a motive for the invention of claim 4 whose sensor comprises the position-detecting mechanism of claim 1.

(4) Claim 5

Because claims 5 is dependent on claim 4 and claim 4 has novelty and inventive steps over References 1 and 2, claim 5 too have novelty and inventive steps as a matter of course.

[5] Conclusion

As described above, a person skilled in the art could not have easily arrived at the inventions of the subject application, no matter how he considered the arts of References 1 and 2.

In view of the foregoing, withdrawal of the rejection based on the lack of novelty and inventive steps is respectfully solicited.